

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
1 July 2004 (01.07.2004)

PCT

(10) International Publication Number
WO 2004/054581 A2

(51) International Patent Classification⁷: **A61K 31/46, 31/438, A61P 31/18, 31/04, C07D 451/02, 471/10, 333/52, 211/26, 401/04**

Joseph [US/US]; GlaxoSmithKline, Five Moore Drive, PO Box 13398, Research Triangle Park, NC 27709 (US).

(21) International Application Number:
PCT/US2003/039732

(74) Agents: **LEVY, David, J et al.**; GlaxoSmithKline, Five Moore Drive, PO Box 13398, Research Triangle Park, NC 27709 (US).

(22) International Filing Date:
12 December 2003 (12.12.2003)

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(30) Priority Data:
60/433,552 13 December 2002 (13.12.2002) US

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **SMITHKLINE BEECHAM CORPORATION [US/US]; One Franklin Plaza, Philadelphia, PA 19101 (US).**

Published:

— *without international search report and to be republished upon receipt of that report*

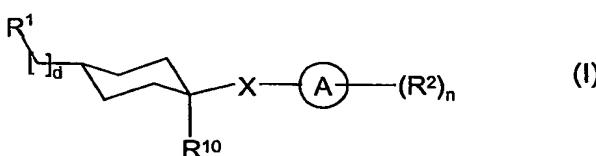
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **DUAN, Maosheng [CN/US]; GlaxoSmithKline, Five Moore Drive, PO Box 13398, Research Triangle Park, NC 27709 (US). KAZMIERSKI, Wieslaw, Mieczyslaw [US/US]; GlaxoSmithKline, Five Moore Drive, PO Box 13398, Research Triangle Park, NC 27709 (US). AQUINO, Christopher,**

WO 2004/054581 A2

(54) Title: CYCLOHEXYL COMPOUNDS AS CCR5 ANTAGONISTS



(57) Abstract: The present invention relates to compounds of formula (I), or pharmaceutically acceptable derivatives thereof, useful in the treatment of CCR5-related diseases and disorders, for example, useful in the inhibition of HIV replication, the prevention or treatment of an HIV infection, and in the treatment of the resulting acquired immune deficiency syndrome (AIDS).

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
1 July 2004 (01.07.2004)

PCT

(10) International Publication Number
WO 2004/054581 A3

(51) International Patent Classification⁷: A61K 31/46, 31/438, A61P 31/18, 31/04, C07D 451/02, 471/10, 333/52, 211/26, 401/04 // (C07D 471/10, 235:00, 221:00) (C07D 471/10, 221:00, 209:00)

(74) Agents: LEVY, David, J. et al.; GlaxoSmithKline, Five Moore Drive, PO Box 13398, Research Triangle Park, NC 27709 (US).

(21) International Application Number:
PCT/US2003/039732

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date:
12 December 2003 (12.12.2003)

(84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(25) Filing Language: English

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(26) Publication Language: English

(88) Date of publication of the international search report:
3 February 2005

(30) Priority Data:
60/433,552 13 December 2002 (13.12.2002) US

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

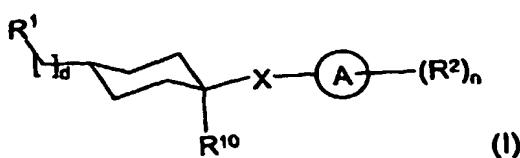
(71) Applicant (for all designated States except US):
SMITHKLINE BEECHAM CORPORATION [US/US]; One Franklin Plaza, Philadelphia, PA 19101 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): DUAN, Maosheng [CN/US]; GlaxoSmithKline, Five Moore Drive, PO Box 13398, Research Triangle Park, NC 27709 (US). KAZMIERSKI, Wieslaw, Mieczyslaw [US/US]; GlaxoSmithKline, Five Moore Drive, PO Box 13398, Research Triangle Park, NC 27709 (US). AQUINO, Christopher, Joseph [US/US]; GlaxoSmithKline, Five Moore Drive, PO Box 13398, Research Triangle Park, NC 27709 (US).

WO 2004/054581 A3

(54) Title: CYCLOHEXYL COMPOUNDS AS CCR5 ANTAGONISTS



(57) Abstract: The present invention relates to compounds of formula (I), or pharmaceutically acceptable derivatives thereof, useful in the treatment of CCR5-related diseases and disorders, for example, useful in the inhibition of HIV replication, the prevention or treatment of an HIV infection, and in the treatment of the resulting acquired immune deficiency syndrome (AIDS).

INTERNATIONAL SEARCH REPORT

Interr. Application No
PCT/US 3/39732

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A61K31/46 A61K31/438 A61P31/18 A61P31/04 C07D451/02
 C07D471/10 C07D333/52 C07D211/26 C07D401/04
 // (C07D471/10, 235:00, 221:00), (C07D471/10, 221:00, 209:00)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K A61P C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CHEM ABS Data, BEILSTEIN Data, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 182 195 A (TAKEDA CHEMICAL INDUSTRIES LTD) 27 February 2002 (2002-02-27) page 130, line 49 - line 51; claims 1,16; examples 70,73	1-21, 23-36
X	WO 01/72751 A (MUNSCHAUER RAINER ; BASF AG (DE); RAFFERTY PAUL (GB); JOHNSTON DAVID N) 4 October 2001 (2001-10-04) claim 1; examples 197,196	1-21, 23-39
E	EP 1 403 255 A (SUMITOMO PHARMA) 31 March 2004 (2004-03-31) claims; example 159	1-21, 23-39
X	US 6 479 487 B1 (BORCHERDING DAVID R ET AL) 12 November 2002 (2002-11-12) column 138, paragraph 5; claims; examples 29,18; table 1	1-21, 23-39
		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the International filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the International filing date but later than the priority date claimed

- *T* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the International search

9 November 2004

Date of mailing of the International search report

23.11.2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Härtinger, S

INTERNATIONAL SEARCH REPORT

Intern Application No
PCT/US 03/39732

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/49018 A (NOVARTIS ERFINDUNGEN ; CARAVATTI GIORGIO (CH); NOVARTIS AG (CH); IMBAC) 24 August 2000 (2000-08-24) claims; examples 6-9 -----	1-21, 23-39
X	WOLTERSDORF O W ET AL: "Topically Active Anhydrase Inhibitors. 1. O-Acyl Derivatives of 6-Hydroxybenzothiazole-2-sulfonamide" JOURNAL OF MEDICINAL CHEMISTRY, AMERICAN CHEMICAL SOCIETY. WASHINGTON, US, vol. 32, no. 11, 1989, pages 2486-2492, XP002282653 ISSN: 0022-2623 example 28; table 1 -----	1, 4-7, 27, 28, 33, 34
X	WO 97/20823 A (CRISCIONE LEOLUCA ; YAMAGUCHI YASUCHIKA (CH); CIBA GEIGY AG (CH); MAH) 12 June 1997 (1997-06-12) claims 1-8; examples -----	1, 4-7, 27, 28, 33, 34
X	DE 44 17 163 A (HOECHST SCHERING AGREVO GMBH) 23 November 1995 (1995-11-23) claims 1-8; tables -----	1, 4-7
X	WO 99/59974 A (VONG ANTONIO KUOK KEONG ; SMITHKLINE BEECHAM PLC (GB)) 25 November 1999 (1999-11-25) claims 1-6; examples -----	1, 4-7, 27, 28, 33, 34
X	WO 99/64044 A (ADVANCED MEDICINE INC ; CHOI SEOK KI (US); GRIFFIN JOHN H (US); MARQUE) 16 December 1999 (1999-12-16) page 114; claims 1-29; example 149 -----	1, 4-7, 27, 28, 33, 34
X	WO 97/09308 A (LILLY CO ELI) 13 March 1997 (1997-03-13) claims 1-11; example 273 -----	1, 4-7, 27, 28, 33, 34
P, X	WO 03/087098 A (DAVIES DAVID THOMAS ; MARKWELL ROGER EDWARD (GB); BROOKS GERALD (GB);) 23 October 2003 (2003-10-23) claims 1-11; examples -----	1, 4-7, 25, 27, 28, 31, 33, 34
P, X	WO 03/068237 A (BLASKOVICH MARK A ; KIM HWA-OK (US); OGBU CYPRIAN O (US); MOLECUMETICS) 21 August 2003 (2003-08-21) claims 1-19; example 120; tables 3, 4 -----	1, 4-7, 27, 28, 34-36
P, X	WO 03/070244 A (ABBOTT LAB) 28 August 2003 (2003-08-28) page 40 - page 44; claims 1-36 -----	1, 4-7, 27, 28, 33, 34

-/-

INTERNATIONAL SEARCH REPORT

Internal Application No
PCT/US 03/39732

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	WO 03/075853 A (SQUIBB BRISTOL MYERS CO ; CHERNEY ROBERT J (US)) 18 September 2003 (2003-09-18) claim 26; example 122 -----	1, 4-7, 23-39
P, X	WO 03/028641 A (OMODERA KATSUNORI ; SEKIGUCHI YOSHINORI (JP); KANUMA KOSUKE (JP); TAIS) 10 April 2003 (2003-04-10) claims 1,13; examples -----	1, 4-7, 27, 28, 33, 34
X	WITHERINGTON ET AL: "Conformationally restricted indolopiperidine derivatives as potent CCR2B receptor antagonists" BIOORGANIC & MEDICINAL CHEMISTRY LETTERS, OXFORD, GB, vol. 11, no. 16, 2001, pages 2177-2180, XP002208447 ISSN: 0960-894X table 5; compound 8 -----	1-6, 12-15, 17, 19-21, 23-39
A	-----	7-11, 16, 18, 22
E	EP 1 378 510 A (ONO PHARMACEUTICAL CO) 7 January 2004 (2004-01-07) ----- page 17, line 38; claim 1; example 8	1-7, 11, 16, 19-21, 23-39
X	& WO 02/074770 A (ONO PHARMACEUTICAL CO ; TAKAOKA YOSHIKAZU (JP); SHIBAYAMA SHIRO (JP);) 26 September 2002 (2002-09-26) -----	1-7, 11, 16, 19-21, 23-39
A	WO 01/90106 A (PRICE DAVID ANTHONY ; PFIZER LTD (GB); WOOD ANTHONY (GB); PERROS MANOU) 29 November 2001 (2001-11-29) example 4 -----	1-39
A	WO 02/18335 A (MORIHARA KOICHIRO ; MOROKATA TATSUAKI (JP); TAKAHASHI TOSHIYA (JP); YO) 7 March 2002 (2002-03-07) claim 1; examples 381, 382 -----	1-39
A	EP 1 236 726 A (ONO PHARMACEUTICAL CO) 4 September 2002 (2002-09-04) page 11, line 23 - line 43; claim 9; examples 20, 24, 67; tables 14b, 32 -----	1-32
X	WO 98/25897 A (PATCHETT ARTHUR A ; CHEN MENG H (US); WU MU TSU (US); YANG LIHU (US);) 18 June 1998 (1998-06-18) claims; example 10 -----	1-6, 23-39
A	-----	7-22
X	WO 01/36418 A (PETTERSSON INGRID ; HOHLWEG ROLF (DK); NOVO NORDISK AS (DK); WATSON BR) 25 May 2001 (2001-05-25) claims; example 4 -----	1-6
A	-----	7-22

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/39732

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: 1-21, 23-27, 33-39 because they relate to subject matter not required to be searched by this Authority, namely:
Although claims 23-27 and claims 37-39 are directed to a method of treatment of the human body, the search has been carried out and based on the alleged effects of the compound, however, only to the extent to which the compound could be searched.
2. Claims Nos.: 1-21, 33-36 because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple Inventions in this International application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
1-39(part)
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Although claims 23-27 and claims 37-39 are directed to a method of treatment of the human body, the search has been carried out and based on the alleged effects of the compound, however, only to the extent to which the compound could be searched.

Continuation of Box I.2

Claims Nos.: 1-21,33-36

The initial phase of the search revealed a very large number of documents relevant to the issue of novelty. As the formula I basically amounts define a nitrogen containing group (cf. R1) substituted cyclohexyl ring, which is bound via a linker of one to 5 elements selected from carbon, nitrogen, oxygen, sulfur or phosphorus (cf. X) to a further nitrogen containing ring (cf. ring A), the substructure search in the STN Registry database resulted in more than 3400 compounds even for a refined search, which takes into consideration the further definitions in claim 1. So many documents were retrieved relating to the said compound hits, some of them also relate to the claimed antiviral and antibacterial use, that it is impossible to determine which parts of the claims may be said to define subject-matter for which protection might legitimately be sought (Article 6 PCT). For these reasons, a meaningful search over the whole breadth of the claims is impossible. Consequently, the search has been restricted to the use of the said compounds in the treatment of viral or bacterial infections (cf. claims 23 and 25).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internal Application No

PCT/US 03/39732

Patent document cited in search report	Publication date	Patent family member(s)			Publication date
EP 1182195	A 27-02-2002	AU 4145200 A	CA 2373073 A1	EP 1182195 A1	21-11-2000
		US 6627651 B1	WO 0068203 A1	JP 2001026586 A	16-11-2000
					27-02-2002
					30-09-2003
					16-11-2000
					30-01-2001
WO 0172751	A 04-10-2001	WO 0172751 A1	AU 4057000 A		04-10-2001
					08-10-2001
EP 1403255	A 31-03-2004	EP 1403255 A1	US 2004138286 A1	WO 02100833 A1	31-03-2004
					15-07-2004
					19-12-2002
US 6479487	B1 12-11-2002	AP 1054 A	AU 747151 B2	AU 2770999 A	01-04-2002
		BR 9909256 A	CA 2320474 A1	CA 1143858 C	09-05-2002
		CN 200000489 A	EE 1056744 A1	EE 200000489 A	15-09-1999
		HU 0100889 A2	JP 2002504552 T	EP 1056744 A1	28-11-2000
		JP 20004280 A	NO 342604 A1	HU 0100889 A2	02-09-1999
		PL 12902000 A3	SK 12902000 A3	TR 200002463 T2	28-01-2002
		WO 9943675 A1	WO 9943675 A1	WO 9943675 A1	06-12-2000
		US 2003105098 A1	US 2003105098 A1	US 2003105098 A1	02-09-1999
		ZA 9901551 A	ZA 9901551 A	ZA 9901551 A	05-06-2003
		AT 252583 T	AT 252583 T	AT 252583 T	26-08-1999
		DE 69912248 D1	DE 69912248 T2	DE 69912248 T2	15-11-2003
		DK 1056744 T3	DK 1056744 T3	DK 1056744 T3	22-04-2004
		ES 2207182 T3	ES 2207182 T3	ES 2207182 T3	23-02-2004
		HK 1030949 A1	HK 1030949 A1	HK 1030949 A1	16-05-2004
		ID 25444 A	ID 25444 A	ID 25444 A	19-03-2004
		NZ 506235 A	NZ 506235 A	NZ 506235 A	05-10-2000
		OA 11455 A	OA 11455 A	OA 11455 A	28-02-2003
		PT 1056744 T	PT 1056744 T	PT 1056744 T	05-12-2003
		RU 2200162 C2	RU 2200162 C2	RU 2200162 C2	31-03-2004
		SI 1056744 T1	SI 1056744 T1	SI 1056744 T1	10-03-2003
					29-02-2004
WO 0049018	A 24-08-2000	AT 265456 T	AU 3804500 A	BR 0008365 A	15-05-2004
		CA 2360353 A1	CA 2360353 A1	CA 1340054 T	04-09-2000
		CN 60010234 D1	CN 60010234 D1	CN 1340054 T	13-11-2001
		WO 0049018 A1	WO 0049018 A1	DE 60010234 D1	24-08-2000
		EP 1153024 A1	EP 1153024 A1	WO 0049018 A1	13-03-2002
		JP 2002537300 T	JP 2002537300 T	EP 1153024 A1	03-06-2004
		PT 1153024 T	PT 1153024 T	JP 2002537300 T	14-11-2001
		US 2002016329 A1	US 2002016329 A1	PT 1153024 T	05-11-2002
					31-08-2004
					07-02-2002
WO 9720823	A 12-06-1997	AU 7692996 A	WO 9720823 A2		12-06-1997
					27-06-1997

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte... Application No

PCT/US 03/39732

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 9720823	A	ZA	9610020 A	01-06-1997
DE 4417163	A	23-11-1995	DE 4417163 A1 AU 703538 B2 AU 2523595 A BR 9507647 A CA 2190495 A1 CN 1148383 A WO 9531441 A1 EP 0759909 A1 HU 76722 A2 JP 10500115 T TR 28488 A US 5691321 A ZA 9503957 A	23-11-1995 25-03-1999 05-12-1995 09-09-1997 23-11-1995 23-04-1997 23-11-1995 05-03-1997 28-10-1997 06-01-1998 12-08-1996 25-11-1997 19-01-1996
WO 9959974	A	25-11-1999	AU 4262799 A CA 2332316 A1 WO 9959974 A1 EP 1086084 A1 JP 2002515489 T US 6414154 B1	06-12-1999 25-11-1999 25-11-1999 28-03-2001 28-05-2002 02-07-2002
WO 9964044	A	16-12-1999	AU 4335299 A AU 4336899 A AU 4337699 A AU 4423499 A AU 4425399 A AU 4426599 A AU 4543599 A AU 4543799 A AU 4543999 A AU 4549199 A AU 763638 B2 AU 4550899 A AU 4551499 A AU 4551599 A AU 4552099 A AU 4557099 A AU 4672799 A AU 4674799 A AU 4675199 A AU 4675299 A AU 4675399 A AU 4675499 A AU 4677699 A AU 4818199 A AU 5203999 A BR 9910832 A CA 2315883 A1 CA 2318055 A1 CA 2318192 A1 CA 2318286 A1 CA 2318547 A1 CA 2318894 A1 CA 2319068 A1 CA 2319159 A1 CA 2319174 A1	30-12-1999 30-12-1999 30-12-1999 30-12-1999 30-12-1999 30-12-1999 30-12-1999 30-12-1999 30-12-1999 30-12-1999 30-12-1999 31-07-2003 30-12-1999 10-01-2000 30-12-1999 30-12-1999 16-10-2001 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inten

Application No

PCT/US 03/39732

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9964044	A	CA 2319175 A1 CA 2319496 A1 CA 2319497 A1 CA 2319643 A1 CA 2319650 A1 CA 2319651 A1 CA 2319730 A1 CA 2319751 A1 CA 2319756 A1 CA 2320926 A1 CA 2321120 A1 CA 2321152 A1 CA 2321170 A1 CA 2321191 A1	16-12-1999 16-12-1999 16-12-1999 16-12-1999 29-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999 16-12-1999
WO 9709308	A 13-03-1997	AU 717422 B2 AU 6965096 A BR 9606619 A CA 2203912 A1 CN 1173867 A CZ 9701328 A3 EP 0789688 A1 HU 9701714 A2 JP 10508321 T NO 972016 A NZ 318228 A PL 320010 A1 TR 9700334 T1 WO 9709308 A1 US 6245761 B1	23-03-2000 27-03-1997 23-12-1997 13-03-1997 18-02-1998 12-11-1997 20-08-1997 28-06-1999 18-08-1998 17-06-1997 29-07-1999 01-09-1997 21-08-1997 13-03-1997 12-06-2001
WO 03087098	A 23-10-2003	BR 0210016 A CA 2448525 A1 CZ 20033202 A3 WO 03087098 A1 EP 1399443 A1 HU 0400017 A2 US 2004171620 A1	15-06-2004 23-10-2003 18-08-2004 23-10-2003 24-03-2004 28-06-2004 02-09-2004
WO 03068237	A 21-08-2003	CA 2476113 A1 WO 03068237 A1 US 2004014763 A1	21-08-2003 21-08-2003 22-01-2004
WO 03070244	A 28-08-2003	WO 03070244 A1	28-08-2003
WO 03075853	A 18-09-2003	WO 03075853 A2 US 2003216434 A1	18-09-2003 20-11-2003
WO 03028641	A 10-04-2003	CA 2460594 A1 EP 1432693 A2 WO 03028641 A2	10-04-2003 30-06-2004 10-04-2003
EP 1378510	A 07-01-2004	BR 0208167 A CA 2440264 A1 EP 1378510 A1 HU 0400229 A2 JP 3558079 B2 NO 20034148 A	09-03-2004 26-09-2002 07-01-2004 30-08-2004 25-08-2004 14-11-2003

INTERNATIONAL SEARCH REPORT
Information on patent family members

Intern'l Application No
PCT/US 03/39732

Patent document cited in search report	Publication date	Patent family member(s)			Publication date
EP 1378510	A	US	2004082584 A1		29-04-2004
		CZ	20032531 A3		14-01-2004
		WO	02074770 A1		26-09-2002
		JP	2004196822 A		15-07-2004
WO 02074770	A	26-09-2002	BR	0208167 A	09-03-2004
			CA	2440264 A1	26-09-2002
			CZ	20032531 A3	14-01-2004
			EP	1378510 A1	07-01-2004
			HU	0400229 A2	30-08-2004
			WO	02074770 A1	26-09-2002
			JP	3558079 B2	25-08-2004
			JP	2004196822 A	15-07-2004
			NO	20034148 A	14-11-2003
			US	2004082584 A1	29-04-2004
WO 0190106	A	29-11-2001	AT	260914 T	15-03-2004
			AU	5248201 A	03-12-2001
			BG	107140 A	30-05-2003
			BR	0110955 A	03-06-2003
			CA	2408909 A1	29-11-2001
			CN	1437599 T	20-08-2003
			CZ	20023806 A3	14-01-2004
			DE	60102233 D1	08-04-2004
			DK	1284974 T3	07-06-2004
			EE	200200656 A	15-06-2004
			EP	1284974 A2	26-02-2003
			ES	2215129 T3	01-10-2004
			HU	0302474 A2	28-11-2003
			WO	0190106 A2	29-11-2001
			JP	2003534343 T	18-11-2003
			MX	PA02011631 A	27-03-2003
			NO	20025227 A	31-10-2002
			NZ	521477 A	30-07-2004
			PL	359267 A1	23-08-2004
			PT	1284974 T	30-06-2004
			SI	1284974 T1	31-08-2004
			SK	16432002 A3	08-01-2004
			TR	200400541 T4	21-04-2004
			US	2004067977 A1	08-04-2004
			US	2002013337 A1	31-01-2002
			ZA	200209516 A	22-10-2003
WO 0218335	A	07-03-2002	AU	8018701 A	13-03-2002
			WO	0218335 A1	07-03-2002
EP 1236726	A	04-09-2002	AU	1650601 A	12-06-2001
			BR	0016111 A	25-03-2003
			CA	2394679 A1	07-06-2001
			EP	1236726 A1	04-09-2002
			HU	0300641 A2	28-06-2003
			NO	20022609 A	26-07-2002
			US	2004097511 A1	20-05-2004
			CN	1433419 T	30-07-2003
			WO	0140227 A1	07-06-2001
			ZA	200204203 A	27-08-2003
WO 9825897	A	18-06-1998	AU	5599898 A	03-07-1998

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern'l Application No

PCT/US 03/39732

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 9825897	A	WO US	9825897 A1 5965565 A	18-06-1998 12-10-1999
WO 0136418	A	25-05-2001	AU WO	1382901 A 0136418 A1